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INFORMATION SHEET ON A TEST FOR ADEQUACY  
OF BLANCHING IN FROZEN VEGETABLES

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The test for adequacy of blanching in frozen vegetables described below is based upon the determination of peroxidase activity by a method which has given good correlation with the keeping quality of certain frozen vegetables held in freezing storage for a period of four years.

Present knowledge concerning the test indicates that it is applicable to frozen peas, snap beans, Lima beans, asparagus, and cut corn. There is no reason to believe that it will not prove applicable to other frozen vegetables also.

Reagents

1. Distilled water.
2. 0.5 percent guaiacol in 50-percent ethyl alcohol solution.
3. 0.08 percent hydrogen peroxide (2.8 cc. of 30-percent hydrogen peroxide per liter). Keep in refrigerator in dark bottle, and renew each week.
4. Clean sand.

Apparatus

1. Test tubes, 3/4 or 7/8 inch in diameter.
2. Three-inch diameter funnels.
3. Six-inch cotton milk filters.
4. Porcelain mortar (4 to 6 inches in diameter) and pestle.
5. Fifty-cc. graduated cylinder.
6. One- and 2-cc. pipettes.
7. Timer or watch with second hand.
8. Test-tube rack.
9. Balance which will weigh 10-gram samples to  $\pm 0.1$  gram.  
Any triple-beam-type balance is recommended in preference to the single-beam, Harvard type.

### Procedure

1. Cut tissue to be tested into small pieces and weigh out representative 10-gram sample.
2. Place 30 cc. distilled water in graduated cylinder.
3. Place sample in mortar with a little clean sand, add minimum amount of water from graduated cylinder to give best consistency for thorough maceration and grind for 3 minutes. Add remainder of water from graduate and mix.
4. Filter through cotton milk filter.
5. Add 2 cc. of filtrate to 20 cc. of distilled water in test tube.
6. Add 1 cc. of 0.5-percent guaiacol solution without mixing.
7. Add 1 cc. of 0.08-percent hydrogen peroxide without mixing.
8. Mix contents thoroughly by inverting and watch for development of color. If none develops in 3-1/2 minutes, consider the test negative, and the product adequately blanched. In the case of a positive test, the color development will be of sufficient intensity to be easily recognizable. If color develops after 3-1/2 minutes the test is still considered negative.
9. In order to eliminate any question as to color development within the 3-1/2-minute period, it is well to prepare a tube without the addition of the guaiacol and hydrogen peroxide. This will serve as a comparison standard, and will not develop color.

### Sampling

To insure good sampling, it is desirable to select the largest pieces from the package, since they are the most likely to be underblanched. With very large peas or the large-seeded Lima beans, it is desirable to cut each seed in half equatorially, thus doubling the number of units represented in each sample. Vegetables made up of varying proportions of stem, leaf, or flower, etc. should be cut in sampling so as to secure the same proportions of each type of tissue as occur in the whole edible product, and to secure parts from as many units as practicable. With asparagus, for example, the following procedure is recommended:

1. Cut off and discard 3/4 inch from butt end.
2. Split stalks lengthwise, or, if very thick, quarter.
3. Use alternate 1/2-inch cuts from half or quarter of each stalk, starting with 1/2 inch from each end of stalk, discarding second 1/2 inch at each end, using the third, etc.